

WEB-BASED PANORAMIC VR FOR A RESORT

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UNIVERSITI UTARA MALAYSIA

2003



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WEB-BASED PANORAMIC VR FOR A RESORT

A project submitted to the Graduate School in partial
Fulfillment of the requirements for the degree
Master of Science (Information Technology),
Universiti Utara Malayisa

By

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ABSTRAK

Ini adalah satu penyelidikan terhadap perkembangan web site incorporation a panoramic virtual reality (VR), kadang- kadang telah di panggil virtual enviroment (VE), untuk Hotel dan ini adalah teknologi yang boleh membina unique alam sekitar ,dimana pengguna yang duduk di seluruh dunia dan boleh mencari melalui jalan World Wide Web.Supanya memahami dalam mengguna web base panoramic VR yang menjadi alat terhadap membina web site untuk applikasi dalam projek sebenar .Projek ini telah berkaitan dalam perkembangan web site untuk membantu dan promosi Hotel baru di Patani ,Hotel C.S. Patani (<http://www.cspattani.copm>). Kertas kerja ini telah mencari praktik dan teknik procedure seperti gambar disekeliling ,digital stitch,panoramic output dan preview movie dalam perkembangan panoramic medel

ABSTRACT

This study is to develop a web site incorporating a panoramic virtual reality (VR), sometimes called virtual environments (VE), for a hotel and this technology can create a unique environment where the customer can stay anywhere in the world and explore via World Wide Web. This approach uses a web- based panoramic VR as a tool to a create a website for application in a real project. This project involves the development of a website as an aid to promote a new hotel in Pattani, Thailand, the C.S. Pattani Hotel (<http://www.cspattani.com>). This paper explores the practical and technical procedures such as photo capture, digital stitch, panoramic output and preview movie in the development of the panoramic model.

ACKNOWLEDGEMENT

I would like to thank:

University Utara Malaysia for offering the program for Master of Science [M.Sc. IT] Which accordingly has made the production of this project a reality, my supervisor En. Ahmad Yusni Bin Bahaudin for their constructive comments, ideas, the administration of C.S Hotel Pattani for agreement capturing pictures, all the lecturers who have taught me during the program.

My special and heartiest THANKS, My parent for their unmatched support which helped me go through the program and complete this project. Not forgetting my best friends, Mr. & Mrs P.Vicit, Mr. Mustafa Hashmi, Mr. B.Mea, Miss P. Nok, Mr.Racit, Miss Humdeyah, Mr. B.keem, for their kind and value suggestions and continuous support which enabled me for work out on the project and all other friends at Maybank residential college.

And finally, all individuals whom I knew during my stay at UUM.

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CHAPTER 1

INTRODUCTION

The tremendous growth of the computer technology leads the computer graphics that can be efficiently used in many realms of our lives now. In the 20th century it is difficult to envisage that an architect, engineer, or interior designer working without a graphics workstation. In the last many years dramatic developments in microprocessor technology have introduced speedy computer into the market. These machines are equipped with latest, better and faster graphics planks and their prices falling down rapidly. It has become possible even for an average user, to move into the world of computer graphics. (Tomasz, 2000).

Currently in the world of graphics software and applications, the latest technology is Virtual Reality or Virtual Environment (VR or VE), which requires a hardware device, mobile or fixed - Simulates Altered Reality. (Virtual Kingdom, 2002). The Internet has made possible the participation of small organizations and even individuals to enter in the world of E-Commerce in order to increase their business and efficiency. The objective of this project is to design and develop a Panoramic Virtual Reality Model (PVRM) of **C.S. PATTANI HOTEL THAILAND** in line with its E-Marketing strategies.

The contents of
the thesis is for
internal user
only

REFERENCES

- 360panoramic.com. (May 12, 2003). *Why invest in panoramic images?*. Retrieved from World Wide Web: <http://www.360panoramic.co.uk/index.html>
- About, (May 25, 2003). *Virtual Reality and Panoramic Imaging Panoramic images enhanced by virtual reality are inspiring!*. Retrieved from World Wide Web: <http://arttech.about.com/mbody.htm>
- Adobe Corporation. (1994). *User guide adobe premiere le*. UK: Adobe Systems Incorporated.
- Andrew, Davidhazy. (n.d.). (March 30,2003). *A Different Approach to Panoramic Photography*. Retrieved from World Wide Web: <http://www.rit.edu/~andpph>.
- Albrto, D.B. (1999). *Visual information retrieval*. San Francisco,CA: MORGAN KAUFMANN
- Apple.com ,(March 30, 2003). *Converting a Tile Movie To a Cylindrical QuickTime VR Movie*. Retrieved from World Wide Web: http://developer.apple.com/techpubs/quicktime/qtdevdocs/IQT_QTVR/5Chap/Converting_e_VR_Movie_.html#BAJJEAH
- Apple.com (May 20, 2003). *Inside VRMakePano.c*. Retrieved from World Wide Web: http://developer.apple.com/techpubs/quicktime/qtdevdocs/IQT_QTVR/5Chap/Specifying_s_of_a_Cube.html
- Aughts. (March 3, 2003). *Immersive, interactive, virtual 360 tours, dynamic, database driven web design & development, rich, streaming media*. Retrieved from World Wide Web: <http://Aughts.com>.
- Bond, Michael T., et al (2000). *Uses of websites for effective real estate marketing*. Journal of Real Estate Portfolio Management, Boston, Vol. 6, Issue 2, Apr.2000.
- Briggs, John C. (1996). *The Promise of Virtual Reality*. The Futurist, Vol. 30, Sept 1996.
- Cohen, Mark Francis. (1998). *Web sites brighten moving picture*. Crain's New York business, Vol. 9, Issue 10, 3 Sept. 1998, pp.24.
- C, Cruz-Neira (1993). *Virtual Reality Overviw*. SIGGRAPH'93, Course,NO.23, pp. 1.1-1 18
- Crispen, Bob.(March ,23 2003). *The History of VRML*. Retrieved from World Wide Web: <Http://hiwaay.net/~crispen/vrml/history.Html>

- Falkenhagen, Lutz. (Sept, 8 1995). *PANORAMA - Technical Summary*. Retrieved Nov 10,2002 from World Wide Web: <http://www.tnt.uni-hannover.de/~falken>
- Finkelstein, Clive. (March 24 ,2003). *Virtual Reality in Business. Enterprise Newsletter-* Retrieved from World Wide Web: <Http://www.visible.com.au/papers/ten04.htm#VRML>
- H.Fuchs, G. Bishop et al. (1992). *Research Directions in Virtual Environments*. NFS Invitational Workshop,Univ. North Carolina (1992).
- M, Gigante.(1993). *Virtual Reality:Definitions, History and Applications*. “*Virtual Reality Systems*”, Academic-Press, ISBN 0-12-22-77-48-1,pp.3-14
- Htu. (May 20, 2003). *What is panoramic photography?*. Retrieved from World Wide Web:<http://www.htu.at/~sascha/ptguide/index.html>
- Judith, S., & Robert L. (2001). *Visual quickstart guide QuickTime*. Berkeley, CA: Connie Jeung-Mills.
- Isdale, Jerry (Nov 10 ,1998). *What Is Virtual Reality?*. Retrieved from World Wide Web: <http://www.isx.com/~jisdale/WhatIsVr.html>
- Kernow.curtin.edu.au.com. (May 25, 2003) *Workthrough*. Retrieved from World Wide Web: http://kernow.curtin.edu.au/www/visualTech1/vt_arch.htm
- Manktelow, James (May 25, 2003). *SWOT Analysis*. Retrieved from World Wide Web: <http://www.mindtools.com/index.html>
- Montgomery County. (Nov 10 ,2001). *Making Quicktime VR Panoramic Movies – Scenes*. Retrieved from World Wide Web: <http://www.mcps.k12.md.us/aboutmcps.cfm>
- Per-Åke R., & Mattias R.. (Nov 10, 2002). *Is Virtual Reality the Next Generation of GIS*, Retrieved from World Wide Web: <http://www.geoplace.com>.
- Peter, K. (1997). *Advanced Web Design, Web graphics Tools and Techniques*, Peachpit Press, p290-300
- Smartdecision. (May 25, 2002). *What is a panoramic picture?* Retrieved from World Wide Web: <http://www.360panoramic.co.uk/index.html>
- Tomasz M., & Michael Gervautz, R. (2000). *History, Applications, Technology and Future*. *Virtual Reality*, p 1-10.
- Winston, S. (2002). *Digital video solutions*. Cincinnati, Ohi: Juska and Lipman Publishing.

Virtual Kingdom. (Nov. 10, 2002). *Virtual Reality technology will change the way your customers use the Internet*. Retrieved from World Wide Web: <http://www.Virtualkingdom.ca>.

Virginia, Howlett. (1996). *Visual Interface design for windows*. New York: John Wiley and Sons Inc.

D, Zeltzer. (1992). *Autonomy, Interaction, Proesence. Presence*, Vol.1, No.1, pp. 127-132